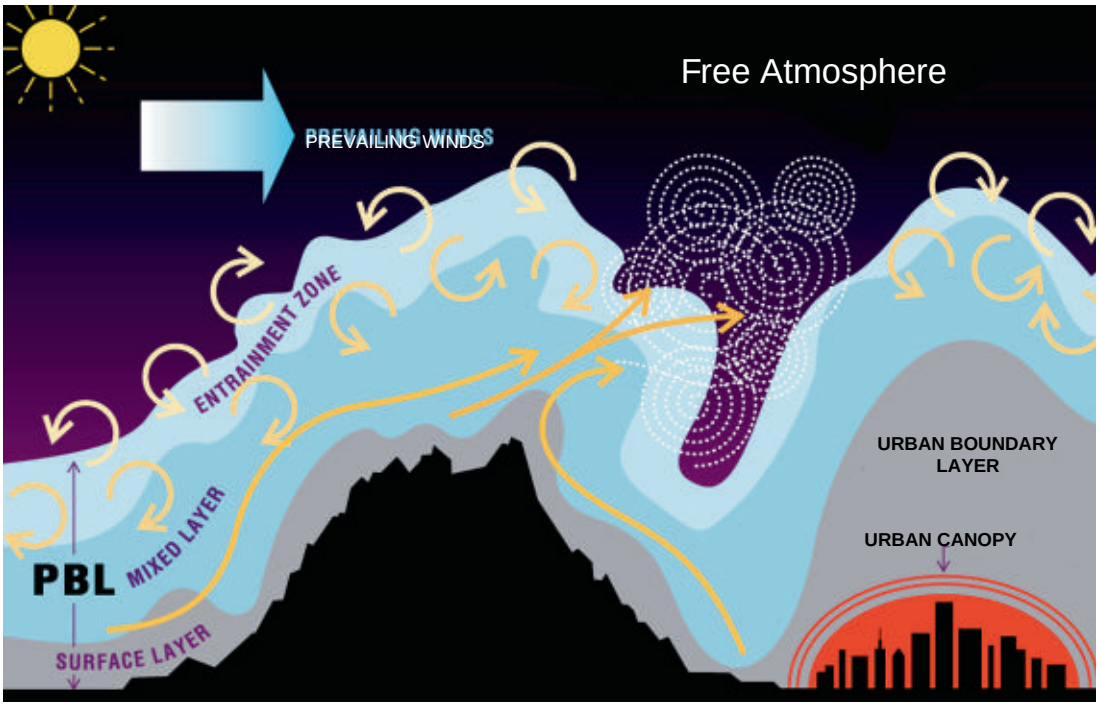
BITS computing&communications news

AUGUST 1997

COMPUTING, INFORMATION, AND COMMUNICATIONS (CIC) DIVISION • LOS ALAMOS NATIONAL LABORATORY



The Department of Energy, Department of Defense, Environmental Protection Agency, and Los Alamos National Laboratory are sponsoring an environmental management workshop called ModSim '97. This workshop, which runs from September 22 through 24 in Albuquerque, NM, will seek to discover whether modeling and simulation activities are important to the success of environmental cleanup and treatment activities and, if they are, explore how these activities can be further developed. The graphic shown here was designed by Don Montoya (CIC-1) at the request of the Integrated Science and Technology Program at Los Alamos. Susan Carlson (CIC-1) integrated the graphic into the ModSim '97 conference brochure. The graphic is designed to depict a possible scenario that could be pursued for future modeling and simulation efforts to solve environmental management problems on a national and international scale. For more details, see the article on page 2.

Inside this issue

Feature Articles
CCVAX Machine to be Decommissioned 1
Machine RHO Soon to Retire 1
Workshop on the Role of Modeling and Simulation in Environmental Management 2
Customer Feedback Guides Improvements to Labwide Systems 4
GartnerWeb Update 5
New Dial-Up Modem Number for Accessing E-mail from Home or Travel 5
Accessing On-line Computing Literature via the Research Library 6

WWW at LANL
Active Content and Web Browser Security 8

Tips from the Consultants
Capture That Image: Screen Shots on Multiple Platforms 11

Microcomputing News
Laboratory Stretches Software Dollars 15
MacTips: Dealing with Attachments in Eudora Pro 16

In the Classroom
Research Library Training 17
Labwide Systems Training 18
Advanced Technical Computing Training 20

Index 27

Customer Service Center . . . . . .(505) 665-4444 or cichelp@lanl.gov

Because of the wide variety of CIC computing services, numerous facilities are available to address your questions. If you are uncertain whom to call, you can always call the Customer Service Center (CSC). CSC consultants are trained to either answer your question or locate someone who can. To reach the appropriate consultant, dial 665-4444 and make your selection from the following choices:

Option 1: New user topics including e-mail, passwords, registration, and World Wide Web.

Option 2: Labwide Systems such as Travel, Time and Effort, and Purchase Cards.

Option 3: Scientific computing, storage systems, and networking.

Option 4: Classroom instruction and training.

Option 5: Desktop Consulting for PC and Macintosh software and network configurations.

Consulting Via E-Mail

Customer Service Center.....cichelp@lanl.gov

Scientific and engineering computing.....consult@lanl.gov

Administrative and business computing.....labwide@lanl.gov

Passwords and registration.....validate@lanl.gov

Macintosh computing.....Mac-help@lanl.gov

PC computing.....PC-help@lanl.gov

UNIX computing.....UNIX-help@lanl.gov

Other Useful Numbers

Advanced Computing Laboratory.....665-4530

Central Computing Facility.....667-4584

Network Operations Center.....noc@lanl.gov or 667-7423

Telephone Services Center.....667-3400

CCVAX to be Decommissioned

Future plans for the CCVAX machine call for it to be phased out by September 30, 1997. Current software applications residing on CCVAX need to be moved to another VMS machine by this date. For more information contact the ICN Consulting office (consult@lanl.gov or 667-5746) or the CCVAX system manager, Leon M. Lopez (lml@lanl.gov or 667-8416).

POP Server Accounts on CCVAX

Those using CCVAX as a POP server for e-mail should contact the ICN Consulting office if they need help changing to another POP server machine.

Application Software Residing on CCVAX

Users of application software on CCVAX should contact Leon if they need help assessing the requirements (e.g., INGRES) of their current application software and locating another VMS machine for migration of their applications.

CCVAX Clean-Up

The cleanup of user accounts will begin on August 1, 1997. User accounts that have not been accessed for over 2 months will be deleted unless Leon is notified before that date. Once the older accounts have been cleaned-up, the more recently used accounts will be targeted.

All CCVAX users are encouraged to check their accounts on CCVAX and remove anything they want saved before clean-up begins. Those who are uncertain about their CCVAX machine usage should contact Leon.

User cooperation during this transition period is greatly appreciated.

Leon M. Lopez,
lml@lanl.gov,
(505) 667-8416
Computing Group
(CIC-7)

Machine RHO Soon to Retire

The Computing Group (CIC-7) would like to announce that machine RHO is scheduled to be removed and will no longer be available as of October 1, 1997.

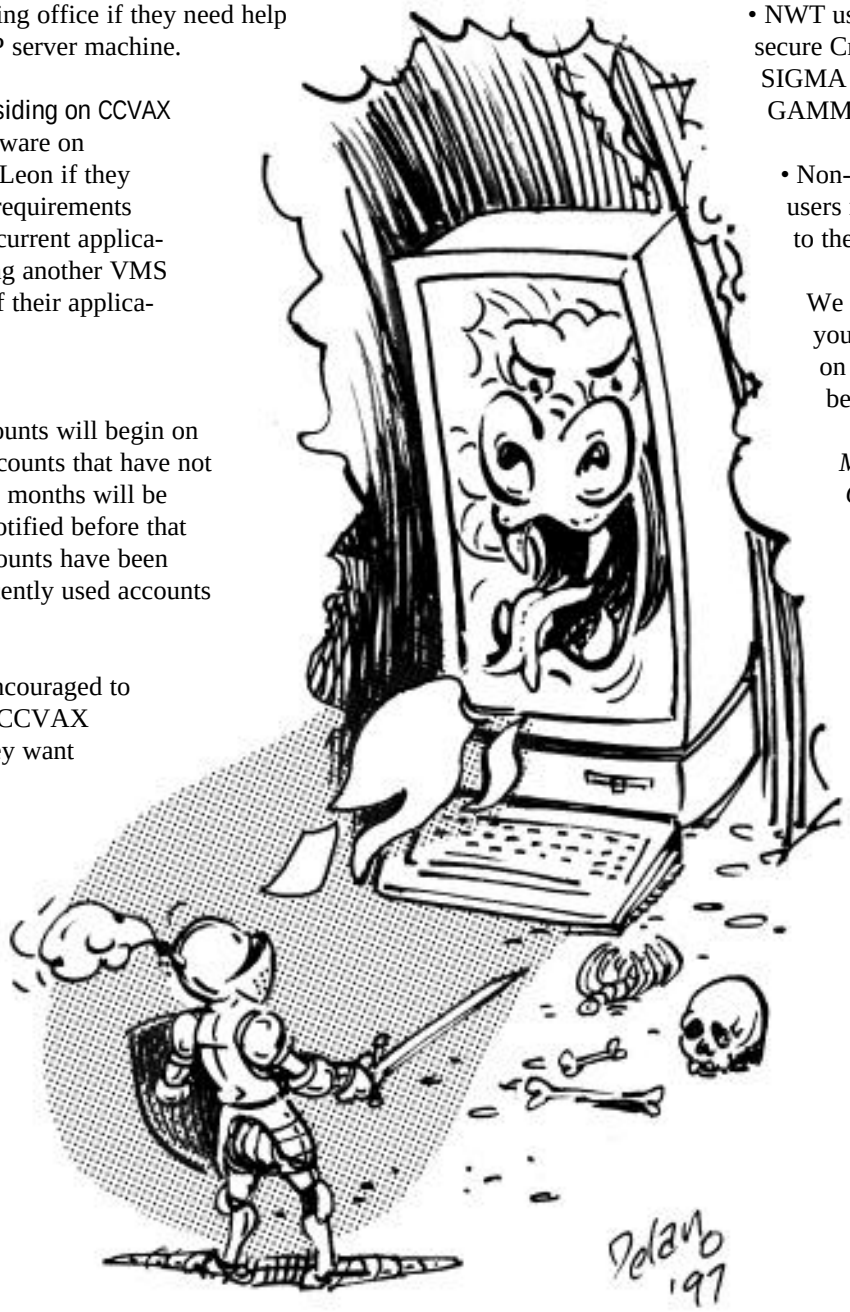
We encourage you to save your critical files on the Common File System (CFS), Network File Server (NFS), etc. Specifically, we recommend that

- DSWA users move to machine GAMMA;
- NWT users move either to the secure Cray PVPs (machines SIGMA and ZETA), machine GAMMA, or ASCI Blue; and
- Non-DSWA/non-NWT users move to GAMMA or to the open cluster.

We further suggest that you test your applications on your target machine before RHO is removed.

Manuel Vigil,
CIC-7 Group Leader,
667-5243

Cheryl Wampler,
SCR Team Leader,
667-0147



Workshop on the Role of Modeling and Simulation in Environmental Management

When and Where
September 22-24, 1997, Albuquerque, New Mexico.

Sponsors
U.S. Department of Energy, Office of Science and Technology; Department of Defense, Office of the Deputy Under Secretary of Defense for Environmental Security; Environmental Protection Agency; and Los Alamos National Laboratory.

Objectives
Define the role of modeling and simulation in environmental cleanup, treatment activities, and future development for these and other environmental applications.

Who Should Attend?
Scientists, managers, engineers, and policy makers with an interest in the potential role of modeling in environmental management. Representatives from academia, government, industry, national laboratories, and foreign entities.

Topics to be Addressed
Actinides, subsurface contamination, decontamination and decommissioning, environmental security, health and environmental effects, infrastructure, manufacturing, pollution prevention, underground storage tanks, and waste treatment.

Outcome of the Workshop
Recommendations that will form the basis for future use of modeling and simulation in the environmental missions of DOE, industry, and other federal and state agencies.

Background
Modeling and simulation technologies have played a critical role in innumerable successful endeavors (e.g., petroleum extraction, defense applications, risk assessment). However, modeling and simulation have not been used to their full potential in the environmental cleanup and waste management arenas. The purposes of this workshop are to assess the role of modeling and simulation and to recommend specific areas where these techniques need to be further developed for nine interest areas:

1. Actinides: all environmental issues associated with the lifecycle of actinides (materials processing, characterization, separations, environmental transport, health and ecological effects, energy production, storage, and disposal).

2. Subsurface Contamination: prediction of contaminant transport and design of remediation techniques in the subsurface (porous and fractured) environment, including aqueous phase, vapor phase, and immiscible fluid transport mechanisms.

3. Decontamination and Decommissioning: removal of hazardous and radioactive materials in facilities either for future safe use of the facility or by removal of the facility itself so that land can be released for other uses.

4. Environmental Security: vulnerability of regions and nations to environmental degradation and associated infrastructure issues, particularly issues of resource allocation and pollution that transcend national boundaries.

5. Health and Ecological Effects: amount of hazardous material reaching humans or biota in the environment, consequences, and uncertainty in risk assessments.

6. Infrastructure: feedback between environmental decision making and infrastructure elements (electrical grids, oil and gas networks, telecommunication and transportation networks).

7. Manufacturing and Pollution Prevention: environmentally conscious manufacturing offers substantial potential cost savings. New processes, systems, and facilities must be designed, constructed, and utilized in an environmentally conscious manner.

8. Underground Storage Tanks: storage and remediation of waste or liquid fuels in underground storage tanks.

9. Waste Treatment: appropriate separation, treatment, configuration, and disposal consistent with requirements for both hazardous and radioactive wastes.

Each of the interest area breakout sessions will address the following discussion areas (as appropriate):

• Business Systems: systems engineering for sufficiently complex systems involves all the traditional disciplines and methodologies that support design, construction, and management, including modeling, analysis, and simulation.

• Decision Support: utilization of formal decision-support methodologies (to include quantitative measures of cost, performance, risk, and/or expert opinion).

• Economics: economic analyses such as cost-effectiveness, cost-benefit, and life-cycle.

• Enabling Science: finding new cost-effective scientific solutions to our environmental problems that will make a difference.

• Fate and Transport: modeling methodologies with the ability to predict the movement of contaminants are critically important in certain geologic regimes.

• Process Modeling, Analysis, and Simulation: the behavior of integrated systems may be different from isolated individual components.

• Regulatory and Public Involvement: the regulatory community needs to have access and see numerous applications where modeling and simulation have an impact.

• Risk Analysis: methods for uncertainty analysis and methods for comparison of different models are vital to understanding the risks involved.

• Uncertainty: use of statistical and stochastic modeling of a range of processes in the environmental arena.

Workshop Plan

The workshop will proceed in four basic steps:

1. Registration and hosted reception at Crowne Plaza Pyramid, Albuquerque, NM, Sunday, September 21, 1997, 6:00-8:00 p.m. at the conference hotel.

2. Plenary session with overview presentations on the background and modeling needs for each interest area. (Monday morning, September 22)

3. Working groups for each interest area will discuss role of modeling and simulation for their area, including role of existing techniques, commonalties with techniques from other interest areas, and needs for further development of techniques. Regular, brief progress reports will be made to all workshop participants. (Monday afternoon through Wednesday morning, September 22-24)

4. Final joint session where each interest area reports its conclusions and recommendations to all the participants. This will form the basis for a document to be delivered to DOE/EM. (Wednesday afternoon, September 24)

Selection of Participants

Participation is limited to approximately 250 people, about 10% of whom will be invited by the Steering Committee to be plenary speakers and interest area leaders.

Each interest area working group will have 20-25 participants. Applicants for the workshop will be assigned to working groups based on their background and interests as indicated on the registration form.

Because a major goal of the workshop is to have input from a variety of perspectives, including government agencies, industry, academia, and the national laboratories, assignments to working groups will reflect the appropriate mix of expertise and broader viewpoints.

You will receive notification by August 8, 1997, as to your participation in the workshop, along with further details on lodging and other logistics associated with the workshop. The registration fee of $250 (US) can be paid after notification.

Registration

Openings for work sessions may still exist. For information about registration, please contact Marja H. Shaner at the address given below.

Marja H. Shaner, marja@lanl.gov, (505) 665-7112
ModSim '97 / Los Alamos National Laboratory
Environmental Management Programs
P.O. Box 1663, Mail Stop J591
Los Alamos, NM 87545

Customer Feedback Guides Improvements to Labwide Systems

Over the next few months you will see several improvements to two major Labwide systems: Total Integrated Procurement System (TIPS) and Travel System. In addition, several new reports are being added to the Data Warehouse System. These improvements and additions were based on feedback from many of you who participated in Focus Groups and CIC's Self-Assessment last year. Before the end of the this year, you will see how the Business Information Systems Group (CIC-13) and the Business Operations Division (BUS) have used your feedback to provide Web-based systems that are easy to access and use.

Total Integrated Procurement System (TIPS)

TIPS includes many components including the Purchase Request System, Invoice Approval System, and Just-In-Time (JIT) Ordering System.

• The Purchase Request System allows anyone who needs to make a purchase to enter a Purchase Order from a Web page, electronically attach supporting documentation, route it for approval, and track the status of the order. Controls built in the system check your signature authority level.

• The Invoice Approval System takes electronic purchasing a step further. After an order has been received and the Laboratory receives the invoice, the Invoice Approval System routes a copy of the invoice to you for approval. An electronic mail message will alert you to the fact that an invoice is awaiting your approval, which should make the turn-around time for payment to vendors much quicker. The Invoice Approval System will allow you to quickly approve invoices and is expected to provide the Laboratory with substantial cost savings through on-time and early payment discounts.

• The JIT Ordering System consolidates the current Web catalog and order placement. The JIT Ordering System will let you browse the on-line catalog, select an item for ordering, and then order the item. It will also provide the capability to check on the status of an order, either for yourself or someone else.

Travel System

The first phase of the Web-based Travel System implementation will include domestic and one-day travel expense reporting and manager approval along with pre-approval and advance requests.

Data Warehouse System

Reports are being added to the Data Warehouse System almost daily. Currently, Data Warehouse includes facility management reports, financial reports, financial history reports, recharge reports, and personnel reports. Check the Data Warehouse Web page to see all the reports available (http://datawarehouse.lanl.gov/).

System Availability

All of these Labwide systems require a Web browser such as Netscape 3.01 and either an ICN password or Smartcard. The JIT Ordering System, Invoice Approval System, and Purchase Request System will be available by late fall of this year. Data Warehouse reports are available now and the Web-based Travel System is scheduled to be available in the first quarter of FY98.

Customer Feedback

You will find with these new systems and reports that CIC-13 and BUS have taken their customer feedback very seriously. The time many of you gave was extremely important and valuable to designing and improving these Labwide systems. However, your continued help is still needed.

• If you use any or all of these systems and would be willing to help test them, please send e-mail to Kay Fletcher (skf@lanl.gov).

• This summer CIC-13 plans to begin hosting User Group Meetings to receive your continuing feedback. Watch for announcements and plan to attend. Your contribution will be extremely valuable.

Kay Fletcher, skf@lanl.gov, (505) 665-1516
CIC Division Office

GartnerWeb Update

GartnerWeb is a service recently obtained by the Research Library (CIC-14) that provides Laboratory employees with Web access to all of Gartner Group's Research, Advisory, and Strategic Planning services and research documents published during the last 18 months.

Coverage of knowledge management (KM) will be increased in several of the GartnerWeb services. KM is the emerging set of policies, organizational structures, procedures, applications, and technologies intended to improve the decision-making effectiveness of a group or enterprise. The new Intranets and Electronic Workplace (IEW) service provides substantial, but not exclusive, coverage of this research topic. The IEW service replaces the Office Information Systems service, providing an expanded focus on the role of intranets and the changes affecting the way office work is performed. The IEW Web page is located at http://www.gartner.com/dirtech/soview.html.

GartnerWeb has also expanded its coverage of Integrated Document & Output Management (IDOM) to cover commercial publishing, corporate publishing, and knowledge management. The commercial publishing research will evaluate technological and strategic issues as they relate to publishers of newspapers, business periodicals, and consumer magazines. Corporate publishing research evaluates technological and strategic issues as they relate to corporate publishers of internal newsletters, marketing brochures, and other publications. The IDOM Web page is located at http://www.gartner.com/dirtech/sovidom.html.

A new delivery process has been instituted for GartnerWeb's Research Notes, which focuses on companies, markets, key issues, products, events, technologies, and questions and answers. Research Notes will now be delivered whenever individual research units are completed and produced. This is an improvement over the old batch-oriented production process.

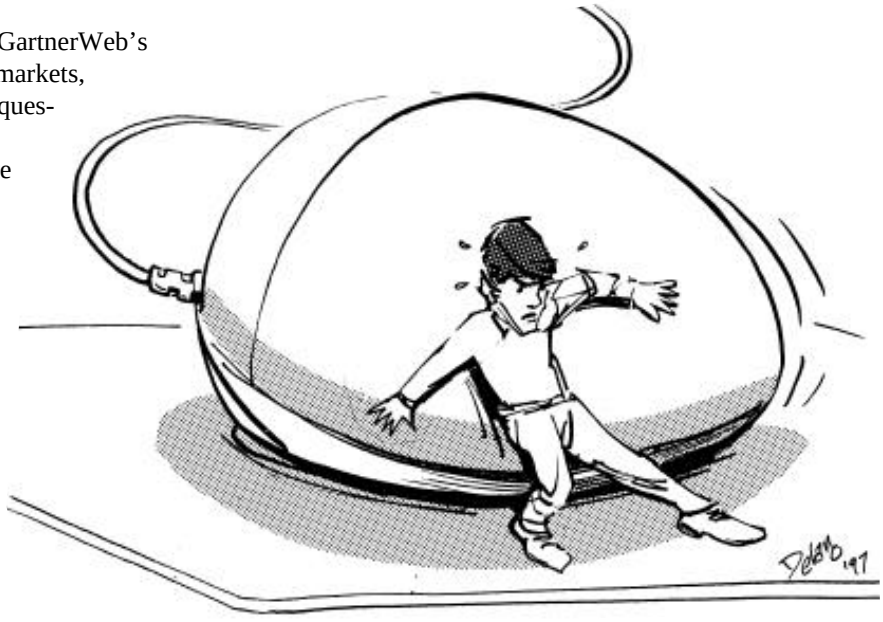
Access to GartnerWeb is available to all Laboratory employees. The GartnerWeb URL is http://www.gartner.com/GartnerWeb/. GartnerWeb can also be assessed through the Research Library's Electronic Database Page which is located at http://lib-www.lanl.gov/.

Frances Knudson, library@lanl.gov, (505) 6667-5809
Research Library (CIC-14)

New Dial-Up Modem Number for Accessing E-mail from Home or Travel

If you read LANL e-mail from home or travel, this article is for you! Effective September 2, 1997, the existing LANL dial-up modem numbers will be changed as follows: numbers 667-9021, 667-9022, 667-9023, 667-9024, and 667-9025 will be replaced with one number—667-9020. All 800 numbers will remain unchanged. New equipment is being installed that will allow us to consolidate the modem numbers and provide improved reliability using a single access number. The new system uses a single access number to provide access to all available dial-up modem ports. With the previous system, individual ports that were out-of-service could keep users from accessing the system from a specific number and required them to dial one of the other access numbers. With the new system, individual modem ports that are out-of-service for any reason will not interrupt a user's access to the system. Dialing 667-9020 should always provide users with a modem port that will answer. If you currently use a script to automate your dial-up and log-in procedures, you need to be sure that the number in your script is 667-9020. If you are unclear how to do this, please talk to your local system administrator or call the Network Operations Center at 665-1648 or 667-7423.

Roger Crandell, rwc@lanl.gov, (505) 667-7860
Network Engineering Group (CIC-5)



Accessing On-line Computing Literature via the Research Library

Computing-related literature is contained within several databases that are available through the Research Library (CIC-14). This article will focus on four of these databases that are accessible from your Internet-connected desktop computer. The four databases are Computer Articles, INSPEC via MELVYL, MathSciNet, and SciSearch® at LANL. A brief description of each follows.

Computer Articles (updated weekly)

This database contains abstracts and citations from more than 150 of the most widely circulated English-language journals and magazines covering many aspects of computers, telecommunications, and electronics; selected full-text articles from more than 80 magazines dated from 1988 to the present; information on hardware, software, peripherals, and services; product evaluations, comparisons, and best buys; and profiles and financial information on computer, telecommunications, and electronics firms.

INSPEC via MELVYL (updated weekly)

Topics covered in this database include systems and control theory, control technology, computer programming and applications, and computer systems and equipment. Information technology topics covered include applications of modern communications, and computing for the production, transmission, storage, and interpretation of visual, oral, and digitally encoded information. Hardware coverage includes microcomputers and related peripherals. INSPEC indexes approximately 4,200 journals, conferences, books, and reports.

MathSciNet (updated weekly and monthly)

This database covers research in mathematics and mathematically related research in statistics, computer science, physics, operations research, engineering biology, and other disciplines. MathSciNet indexes over 2,000 journals, books, conference proceedings, and published dissertations. It provides searching of over 55 years worth of Mathematical Reviews (updated monthly) and Current Mathematical Publications (updated weekly). Mathematical Reviews is available from 1940 to the present with full-text reviews available from 1980 to the present.

SciSearch at LANL (updated weekly)

SciSearch is based on the Science Citation Index, an international, multi-disciplinary index for the journal literature of science and technology. SciSearch at LANL covers 4,600 worldwide journals from 100 scientific disciplines and includes all significant items such as articles, letters, and editorials. It also allows cited reference searching.

Selecting the Appropriate Database

Table 1 provides a comparison between the coverage of scholarly literature and popular literature for each database. For this comparison, scholarly literature is defined as being published by the societies; that is, Association for Computing (ACM), American Mathematical Society (AMS), Institute of Electrical Engineers (IEE), Institute of Electrical and Electronics Engineers (IEEE), and Society for Industrial and Applied Mathematics (SIAM). Popular literature includes Computerworld, Datamation, MacWorld, and PC Week. If a database indexes only a subset of the popular list, the specific magazine covered is noted.

Table 1. Database Coverage of Scholarly and Popular Publications

Database Name	ACM	AMS	IEE	IEEE	SIAM	Popular
Computer Articles	Yes	No	No	Yes	No	Yes
INSPEC	Yes	No	Yes	Yes	Yes	Datamation
MathSciNet	Yes	Yes	No	Yes	Yes	No
SciSearch® at LANL	Yes	Yes	Yes	Yes	Yes	Datamation

After determining which databases cover your specific topic, you should evaluate some other parameters before beginning a literature search. As shown in Table 2, these parameters include the dates covered, abstracts, controlled vocabulary, full-text articles, and alerts/updates.

Subject Coverage

The first step in conducting a literature search is to determine the best match between the subject coverage of the database and the topic for which you want to search. For example, if you were looking for articles on “push technology,” you could begin with Computer Articles because of its closely related subject coverage.

Table 2. Parameters for Searching Databases

Database Name and Web Access	Dates Covered	Abstracts	Controlled Vocabulary	Full-Text	Alerts/Updates
Computer Articles—http://www.melvyl.ucop.edu	1988-present	Yes	Yes	Yes	Yes
INSPEC—http://www.melvyl.ucop.edu	1969-present	Yes	Yes	No	Yes
MathSciNet—http://e-math.ams.org:80/msnprhtml/review_search.html	1940-present	Yes	Yes	Yes	No
SciSearch® at LANL—http://bighorn.lanl.gov:4001	1974-present	Yes	No (1991-present)	No	Yes

Date Coverage

The second step in a literature search is to determine which database has the right date coverage. If you were looking for information between 1940-1969, then MathSciNet would be the best choice because it is the only database with coverage back to 1940.

Abstracts

You should also decide whether or not the presence of abstracts will benefit your search. Article titles and keywords tend to reflect the major focus of an article. New terms or phrases (e.g., push technology, knowledge management) often appear in titles and as keywords as well. However, if your search is limited to titles and keywords, the results of your search may be quite small, though highly focused. Abstracts increase the available words on which to match search terms, and they contain more details like what tools, programming languages, or computer platforms were used in a particular project. The presence of abstracts is also useful because you can read it quickly and then decide if you want to see the entire article.

Controlled Vocabulary

The presence of controlled vocabulary increases the words or phrases on which a search hit can occur. Controlled vocabulary features an indexer that determines the major focus of an article and then assigns the appropriate terms on which to search. Controlled terms are also called thesaurus terms. Controlled vocabulary can also be used to focus searches. For example, you could search for Monte Carlo simulations that use Fortran by using Monte Carlo and Fortran as thesaurus terms in INSPEC (1992-1997), which results in a very focused search with 17 records. A search using Monte Carlo and Fortran as keywords results in 55 records.

Full-Text Articles

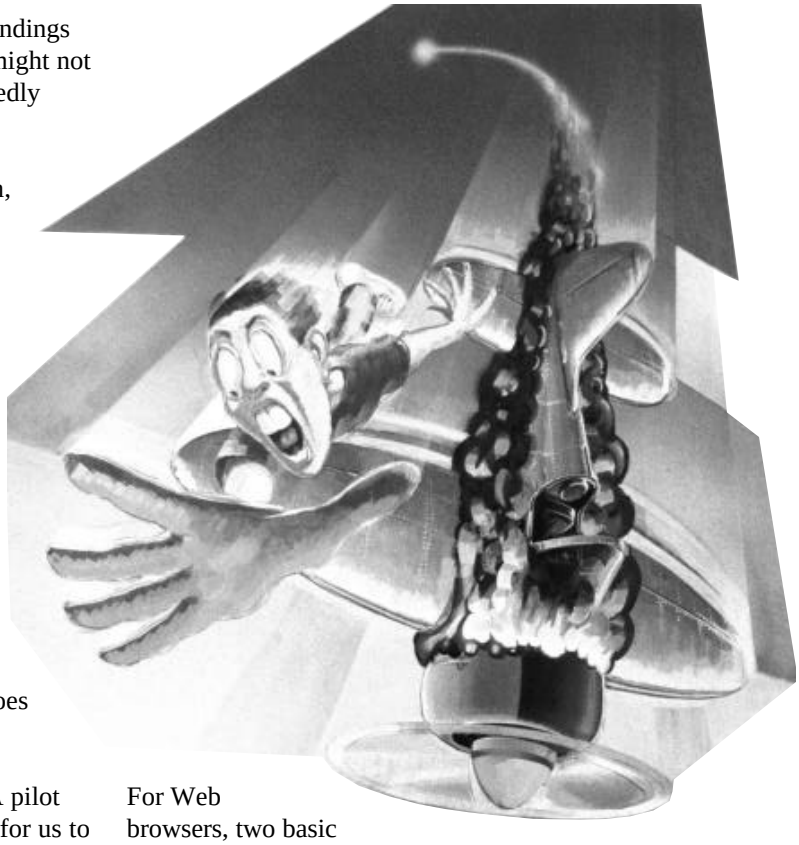
The presence of full-text articles can greatly decrease turn around time for getting source material. If you need a computer product evaluation ASAP, try a search in Computer Articles and limit the search to records that have full-text articles.

Alerts/Updates

Alerts are a time saving feature. After conducting your initial search, you may want to set up an alert to stay current on your topic. Suppose you're starting a new project and want to do a retrospective search in INSPEC via MELVYL, MathSciNet, and SciSearch at LANL, identifying the most important papers and tracing their citation history. Then you could set up a subject alert and a citation alert on SciSearch at LANL to keep you informed about new literature relative to your project. SciSearch at LANL also indicates whether the Research Library subscribes to that particular journal. If conference literature is important in your specific field, you could set up an update on INSPEC via MELVYL.

Frances Knudson, library@lanl.gov, (505) 667-5809
Research Library (CIC-14)

Active Content and Web Browser Security



In aviation, they say that take-offs are optional, but landings are mandatory. It might not be a pleasant landing, it might not be at an airport, but once the plane is up, it will assuredly come down.

On our desktop computers, once we launch a program, we can be assured that it will do something. It might not do what we expect or want, it might crash our computer or do other ugly things, but once the program is launched, it will do what it will do.

Pilots have a good reason to make sure things are in order for their landing before they take off. Those who last long will double-check their engine, their fuel, the weather, where they hope to land, and various other details that can affect the landing. If they don't have good confidence of a safe landing, they don't take off.

Similarly, we should have confidence that a program will do what we want it to do before we launch it. If it acts up, we might be able to stop it before it does much damage. But then again, we might not.

The parallel does not extend indefinitely, of course. A pilot won't take off by accident, but it is increasingly easy for us to launch programs without realizing it. With a modern browser, it is possible to launch programs simply by clicking on a link, and it is possible for those programs to thoroughly disable our computer. It isn't very likely that we'll cause damage, and we'd generally need to have disabled the browser's security features, but it is possible.

What makes the threat possible is active content. Active content refers to material we download that makes something happen, as opposed to static content, such as text or simple images that do nothing but get displayed. Active content includes such things as JavaScript animations, ActiveX controls, Java spreadsheets...anything that actually does something.

As soon as we let something execute on our machine, we accept some degree of risk. Risk is part of the nature of software, regardless of whether we're downloading a program from the Web or installing a shrink-wrapped off-the-shelf product. Some degree of risk is always present, and the task is to manage the risk, make it reasonable, but not expect to eliminate it entirely.

For Web browsers, two basic approaches toward risk management have emerged: the "sandbox" model and the trust model. Each has strengths and each has advocates, but both also have drawbacks. It appears that industry is moving toward a hybrid of the two approaches.

The Sandbox Model

This model seeks to protect the client machine by not allowing a program to perform any potentially dangerous operations (typically including writing to disk and deleting files). Instead, a limited region of the computer, referred to as a "sandbox," is set up. Programs can operate within the sandbox, but they aren't allowed to do anything risky. In theory, any program from anywhere can be accepted because none can do harm.

This is the security model used in Java 1.0 and JavaScript. It is appealing from a network security perspective because it ensures that machines won't get damaged regardless of how users have configured them. Trojan horses and other viruses can't be planted within a network; passwords and other privileged information can't be captured; files won't be deleted or altered without the user doing it him/herself. That's the theory.

In practice, the theory only works as well as the browser software that implements it, and browsers are complex programs that are subject to bugs. For example, a variety of widely publicized security holes reported in Netscape 2.x, 3.x, and 4.x have boiled down to flaws in the implementation of the Java or JavaScript sandbox. (Note that Netscape patches these bugs quickly and that, as far as I've been able to find, there's no evidence of any of them having been maliciously exploited.)

A further drawback to the sandbox model is that when we restrict what programs can do, we're restricting their usefulness as well as their risks. Complex programs that require write access to the disk, for example, are unable to run in the typical sandbox. If you can't write to the disk from a program, then you can't save your work to access later. (Consider placing an on-line order if you can't keep a receipt for yourself.) Only relatively lightweight programs can operate in the sandbox, which leaves the Web only a fraction as useful as it might be.

The Trust Model

The trust-based security model addresses this limitation by letting the user decide whether or not to run a program, and then, if the answer is yes, basically allowing the program to do anything. The idea here is if you trust the program, you can let it run, while if you don't, you can stop it before it starts. This is the model used by Microsoft with its early ActiveX technology.

In its purest form, this model allows a program to take full advantage of the capabilities of the desktop computer. From a usefulness and performance perspective, this is very helpful, giving Web applications the potential of matching the power of shrink-wrapped off-the-shelf software. From a security perspective, though, this capability is a real threat, since a single user making a single bad decision could put an entire network at risk.

As implemented by Microsoft, the trust model uses "certificates" to verify whether a program is what it claims to be. These certificates are digital credentials issued by a trusted organization (a "Certificate Authority," or "CA") which vouches that a Web site is what it claims to be. Only Microsoft can assert that it's Microsoft; only Netscape can assert that it's Netscape; etc. The user then decides whether or not to trust the organization. (Note that Netscape also makes use of certificates from CAs to positively identify individuals and organizations, though it does so within the context of a primarily sandbox model...at least through version 3.01).

In practice, there have always been certain restrictions on programs downloaded into the Internet Explorer browser. The widely publicized Internet Explorer 3.01 security issues (March 1997) were, for example, challenges to Microsoft to tighten its relatively loose boundaries (not really a "bug" as was widely reported). Even so, the potential threat only occurred if users disabled or ignored all the warnings that are part of Microsoft's trust model.

The Emerging Hybrid

The sandbox protects the client machine but cripples the programs that can run there. The trust model gives programs greater capabilities but enables them to pose greater security risks to the client machine (and the network it is attached to).

Up until February of this year, that is where things stood. Then Sun Microsystems announced the Java Development Kit (JDK) 1.1, which represents a significant step toward the trust model. Microsoft responded with "security zones," which in turn represents a step toward the sandbox. The emerging middle ground is a hybrid model that seeks to take advantage of the best elements of both the sandbox and the trust model.

JDK 1.1 opens up the sandbox for trusted programs so that they can have greater access to the machine's resources and perform more robustly. Trust is established when a program has a certificate from a trusted CA. If a program lacks the certificate, then it remains in the sandbox where the security risks are controlled.

Microsoft, with a very similar result, allows the user to divide the Web into trusted and non-trusted zones. Programs from the trusted zones have broad access to the machine, while sandbox-like restrictions are placed on programs from the non-trusted zones. Microsoft uses a combination of user choices and CAs to establish what belongs in each zone, with the additional capability of letting network managers decide what is and is not trusted on behalf of the individual users.

Both JDK 1.1 and Microsoft security zones take the Web a big step toward its overall potential. Whenever we're in a trusted region—say, within the Laboratory's internal network—we can let programs do whatever they need. When we go to sites that are less familiar—say, the CNN Web site—we can rely on the CAs to provide some assurance that programs are what they assert to be, not a time-bomb that some intruder has left behind. Beyond that, if we're accepting unsigned code from unknown sources—well, a pilot who takes off without checking the weather comes to mind.

Practical Considerations

JDK 1.1 and Microsoft security zones are on the way, but neither seems quite ready for prime time, yet. JDK 1.1 is still being updated (the JDK 1.1.3 bug-fix patch has only been out a week prior to this writing). The JavaSoft HotJava browser seems to have fairly extensive JDK 1.1 support, but Netscape's JDK 1.1 support is still developing and Microsoft's JDK 1.1 support is still in preview release (as of this writing). Security zones are only implemented in a preview release of MS Internet Explorer 4.0, though that, too, may have changed by the time this is published. I have found no indication that Netscape plans to implement "security zones" as such, though the Netscape Communicator security controls appear quite similar to security zones in the way they operate.

A number of CAs are already available, provided by AT&T, Verisign, and others. Even before the version 4 releases, both Netscape and Microsoft supported many of the same CAs. To gain familiarity with these in Netscape Navigator 3, look under Options/Security Preferences/Site Certificates, and click on Help or Edit Certificate.

For More Information

For more information about Web security, please see the BITS articles Web Cookies: Their Reason, Nature, and Security (June 1997), and Web Security in the Open Network Security Model (April 1997).

For more information about computer security in general, please see the Information Architecture Computer and Network Security activity area page at http://www.lanl.gov/projects/ia-lanl/area/security/.

For more information about IA work on Web issues, please see our General Internet/WWW activity area page at http://www.lanl.gov/projects/ia-lanl/area/web/.

For more information about the IA Project in general and other work it has done, please see our home page at http://www.lanl.gov/projects/ia/.

For additional questions about the IA project or printed or e-mail copies of our materials, please feel free to contact me at the address given below.

Tad Lane, tad@lanl.gov, (505) 667-0886
Information Architecture Standards Editor
Communications Arts and Services (CIC-1)

Browser Security News

Both Netscape and Microsoft have recently made the news with a series of security bugs, all of which will have hopefully been fixed by the time this article reaches print. Affected browsers include Netscape Navigator 2.0, 2.01, 2.02, 3.0, 3.01, 3.02, 4.0, 4.01, and 4.01a, apparently cross platform; and Microsoft Internet Explorer 3.0, 3.01, 3.02, and 4.0 preview 1 for Windows 95 and NT 4.0. These are potentially serious holes, since they can enable a malicious Web author to monitor what a user does, including capturing passwords, credit card numbers, and other personal information. There have not yet been reports of the bugs being maliciously exploited, but they do constitute a risk.

For up-to-date news on browser security, please visit the IA's new Web security page at http://www.lanl.gov/projects/ia-lanl/web-security/. This new page includes strategies for protecting browsers (including what to do until software fixes are available and how to take advantage of the Laboratory's Web proxy server for additional protection), locations for the most up-to-date versions of browser software, and discussion forums where you can ask questions and report any news and/or problems you may have encountered.

Capture That Image: Screen Shots on Multiple Platforms

A few months ago I wrote an article for BITS about several utilities for Macintosh. I received more feedback from the LANL computing community on that one article than on all of the other BITS articles I have written combined. A lot of readers wanted to know about other handy utilities. Others were interested in utilities for other platforms such as Windows.

This article is devoted to one topic, capturing and manipulating screen images. We have all found times when we wish we could simply lift a graphic out of one application and pop it into a paper we were writing or a Web site. It is actually quite easy to do. The tools may already be on your machine. If not, they are easily and cheaply attainable. I will try to address several of the computing platforms used at LANL including Windows 95/NT, MacOS, Sun, and SGI.

Capturing Images off Netscape

This is remarkably easy to do once you know the secret. Netscape treats the image on a page as a link. If you click on an image in a certain way, a menu will pop up that will allow you to save the image for further use in your own Web pages or other documents. For example, suppose you wanted to capture the image of the computer puzzle from the CIC-6 Web pages. Just position your cursor over the image and invoke the image menu (see Figure 1).

To invoke this secret menu of options in Netscape, position the cursor so that it is on top of the image you want to save. On a Windows or Sun/SGI machine, you need to hold down the right mouse button for a few seconds. On a Macintosh you will need to hold down the mouse button for a few seconds. The menu will pop up allowing you to save the image to the folder or directory of your choice. You can also rename the image. Go ahead and grab a few images off of the Web!

Capturing Images on Windows 95/NT

Microsoft allows you to "print" a window or screen to the clipboard and then paste that image into a select few applications. This is slow and tedious. There are two tools available that speed up the process and allow for easier customization. Hypersnap is a tool that allows you to capture screen images very easily (see Figure 2 on page 12). You can capture a window to show others the great graph you have been working on or the molecular view that will get you an NIH grant. You could even capture a menu of options to demonstrate to your colleagues how to run a particular program. If you see it on your monitor, you can capture it as a file.

Hypersnap also allows you to save the image in several different formats including TIFF, JPEG, or GIF (JPEG and GIF are the graphic formats most used on the Web). Hypersnap is available to LANL employees for free via CIC-2's Electronic Software Distribution Page. You can download it at http://esd.lanl.gov. If you are not on a LANL site, you can get a demo copy at http://www.download.com.

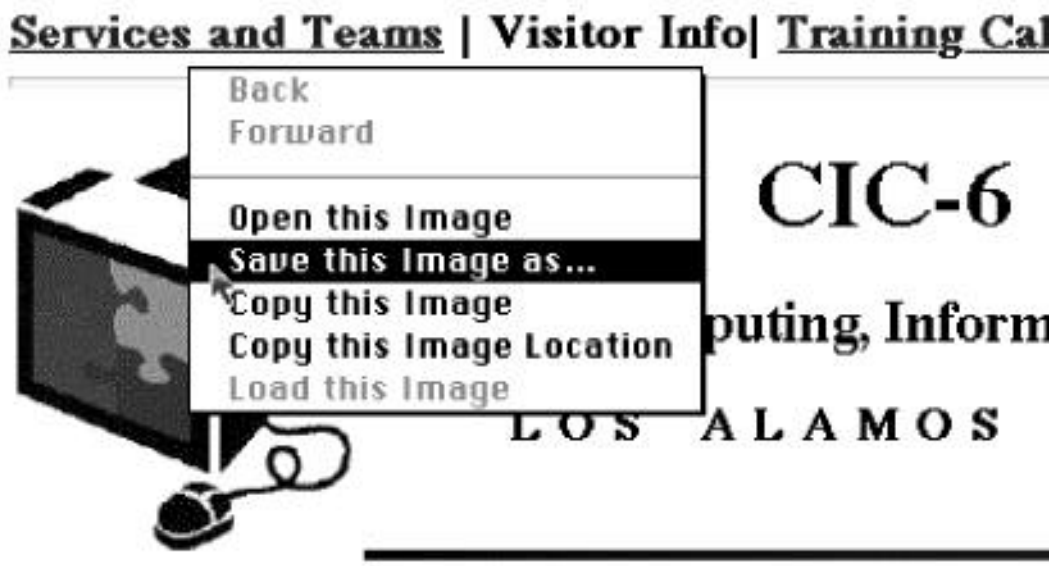


Figure 1. Capturing an Image off Netscape

Another extremely useful tool for Windows is Paintshop Pro. This tool allows for screen, window, and menu captures. And once you capture an image, Paintshop Pro offers a plethora of options including simple graphical editing and conversion to almost any graphical format you can think of. If you ever deal with pictures and run Windows 95/NT, then by all means take a look at Paintshop Pro. You can get a copy at http://www.download.com. More on Paintshop Pro later in this article.

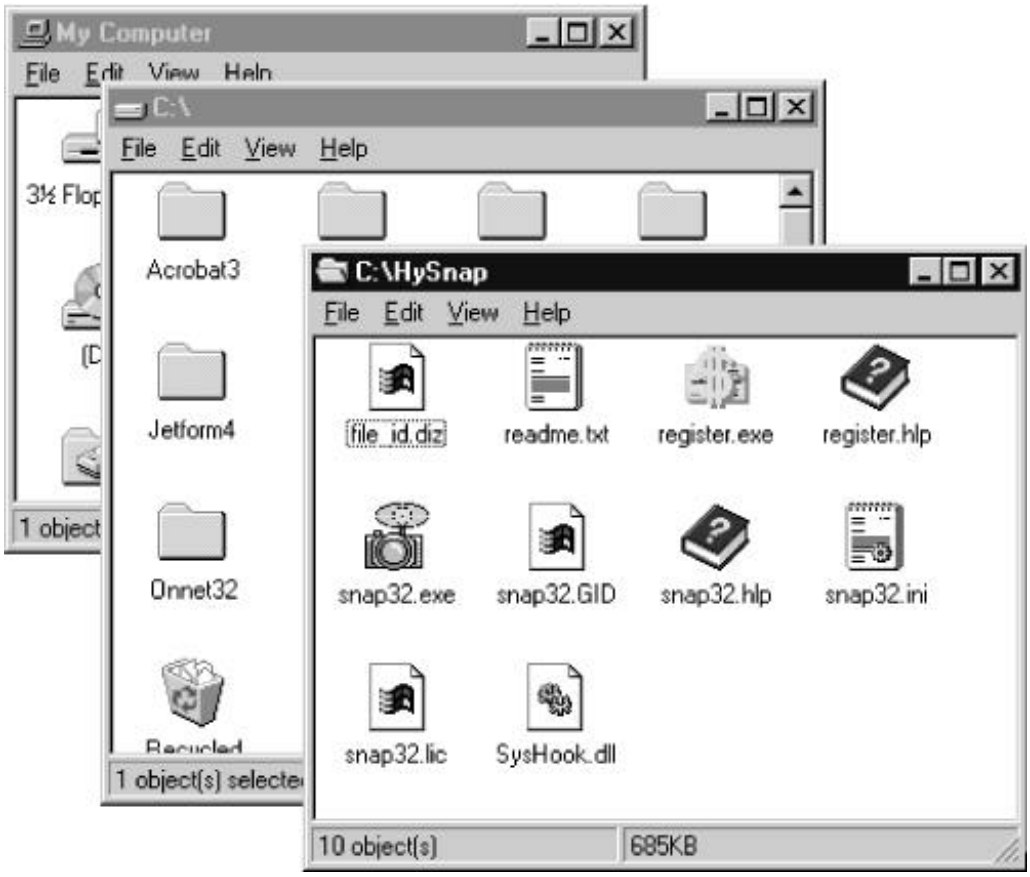


Figure 2. A Windows 95 Window Captured with Hypersnap

Capturing Images on Macintosh

MacOS has a built-in screen capture utility. If you hit SHIFT-COMMAND-3 you will hear the sound of a camera shutter. When you look on your hard drive you will see a PICT file that comprises a total screen capture. However, the resolution is poor and often the image is squished (yes, that is a technical word) or skewed.

A few months ago I wrote about a utility called Flash-It. Since then I have switched to Snapz-Pro, a new utility from Ambrosia Software (see Figure 3). Snapz-Pro allows full manipulation over the image you capture. In addition, you have seemingly countless options. Want the image saved in black and white? No problem. Want to crop the image as you capture it? Easy as pie. Need to save it for immediate opening in a specific graphical application. It's a snap. This utility has been getting high reviews in many Macintosh magazines and is becoming an overnight Mac standard. You can add it to you collection for only $20. Download your fully functional demo at http://www.ambrosiasw.com. No Mac owner should be without this utility.

Capturing Images on UNIX

Because there are so many UNIX platforms, it would be next to impossible to cover them all in one article. Most come with some sort of screen capture utility. Sun-OS has Snapshot as does SGI (see Figure 4). This utility also allows for easy screen capture of windows and regions. The format of graphics are often unique to the UNIX platform on which you are working. For example, an image captured on Sun-OS is saved as a SUN rastor file. Whereas SGI saves files in its own RGB mode.

Manipulating Captured Images

Once you have captured the image you desire, you may need to manipulate it a bit so that it will meet your specific needs. For example, you may want to crop it or convert it to black and white. You may have saved it in one graphical format (TIFF, PICT, RS, etc.) but need it in another format (GIF, JPEG, etc.). For any of these tasks you will need a graphical application.

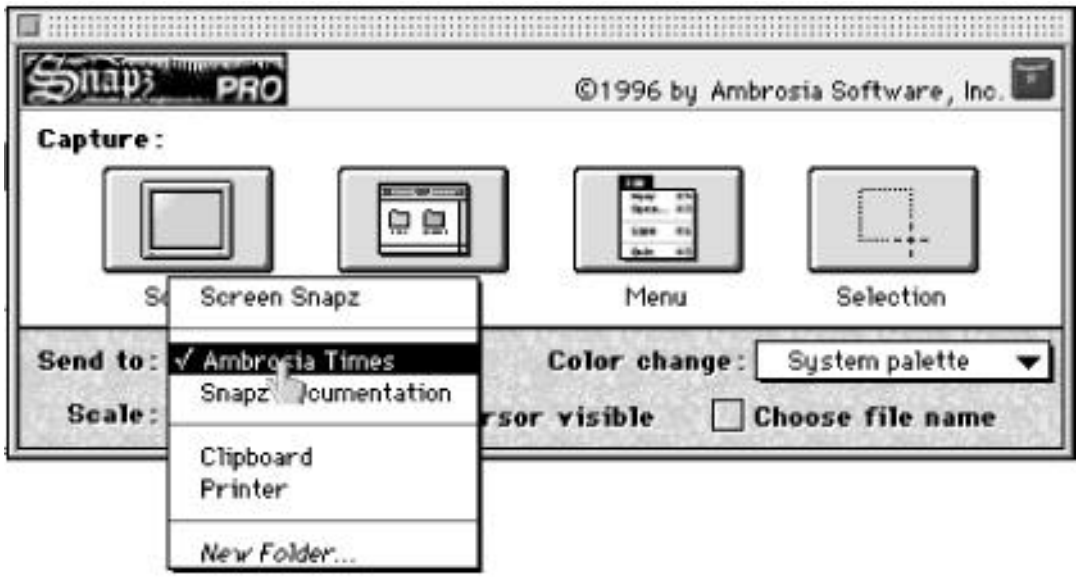


Figure 3. Snapz-Pro for the Macintosh

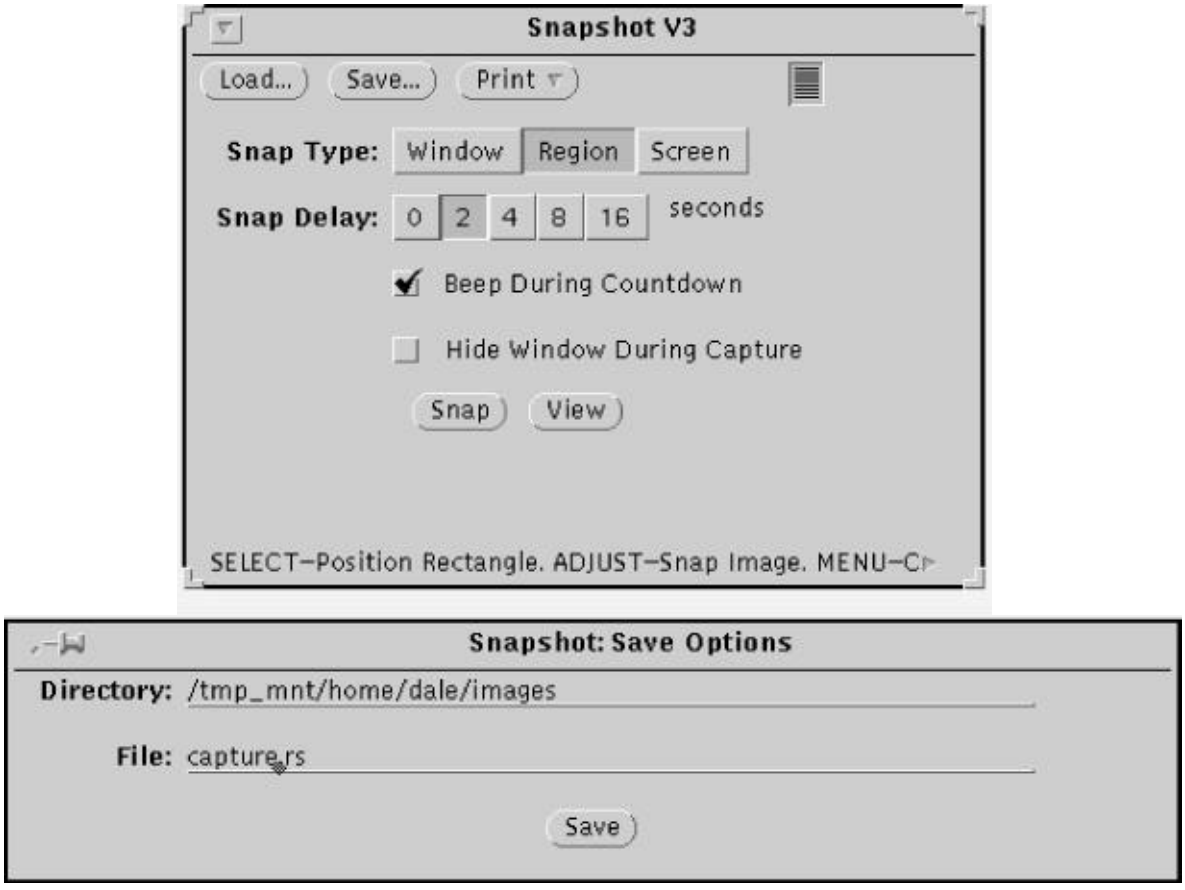


Figure 4: A look at the Sun-OS Snapshot Utility

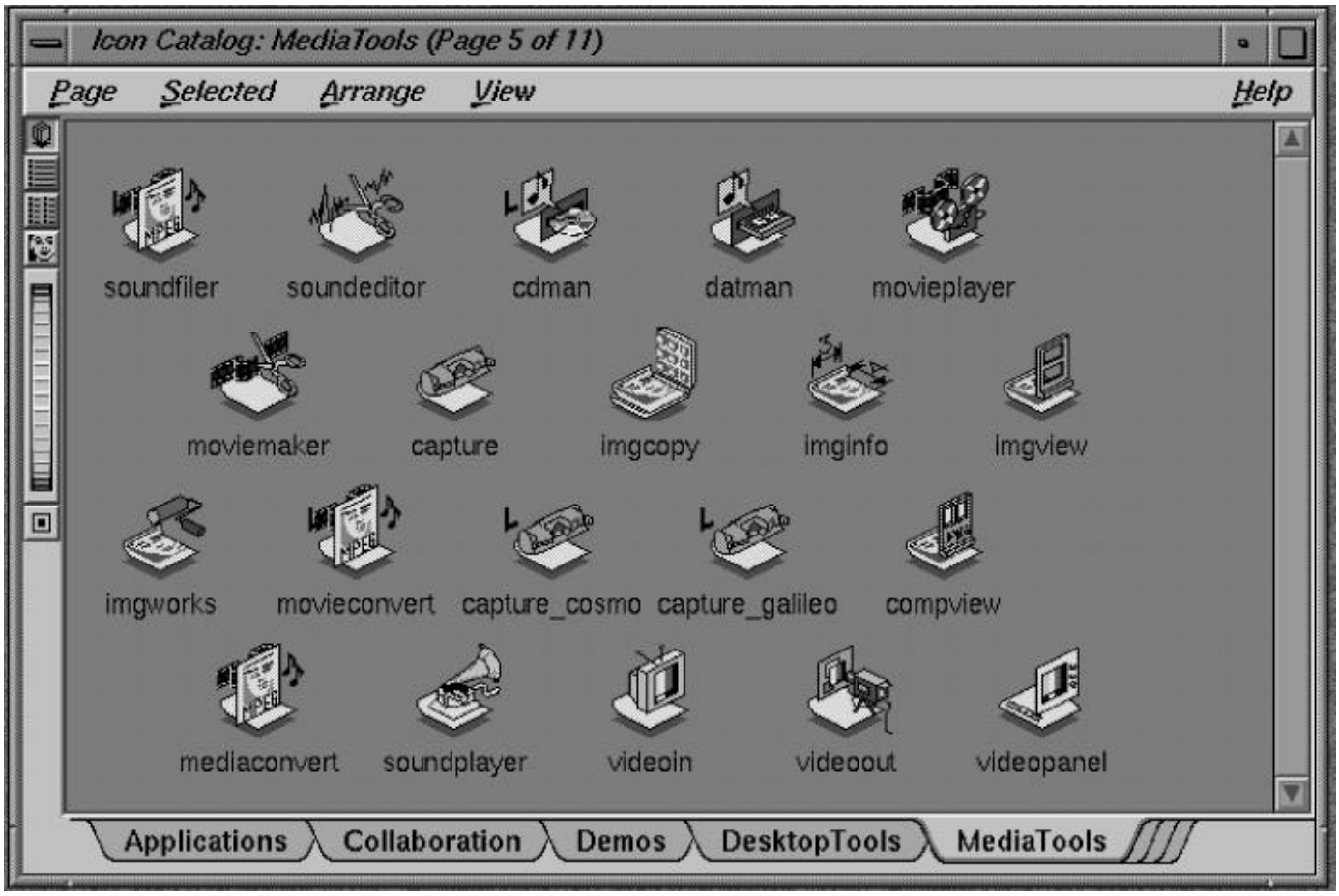


Figure 5: An RGB File Captured with SGI Snapshot

You may desire the great power of a graphical giant like Photoshop or Quark Express. But if you would rather not purchase a $600 application, there are other less expensive yet powerful alternatives for you to try.

Windows users should take a look at Paintshop Pro (mentioned above). This tried and true application will allow both screen capture and manipulations. Macintosh users have already heard me praise GraphicsConverter. It will convert graphical formats (for this article I used images in TIFF, PICT, GIF, Sun, and SGI formats), resize and touch up images, etc., etc., etc! No Mac user who jockeys graphics should be without it. Paintshop Pro and GraphicsConverter are both available at http://www.download.com.

Most UNIX systems come with a graphical viewer and editor. A common one on Sun-OS is xv. Solaris offers Imagetool, and SGI has Imgworks and Snapshot (see Figure 5). These tools allow conversion of image formats, cropping, resizing, etc. There are also many commercial packages available.

Remember, if you can see it on your computer screen, you can capture it to a file. Once on disk the graphical possibilities are endless.

Acknowledgments: Thank you goes to Weldon Scoggins of the CIC-6 Desktop Consultants Team for his assistance with the Windows 95 utilities.

Dale H. Leschnitzer, consult@lanl.gov, (505) 665-4444
ICN Consulting Office, Customer Service Group (CIC-6)

Laboratory Stretches Software Dollars

The REDI Project thanks all Laboratory organizations and personnel who stretched their software dollars by purchasing Microsoft SELECT Maintenance for their existing software products. By the June 30 deadline, Laboratory personnel had purchased over 4,600 Maintenance licenses, saving the Laboratory a projected one million dollars for FY97 and over two million dollars for FY98.

In addition to cost savings, what does this timely response mean for organizations and individual users?

• People now using old versions can jump directly to the very latest.

• Administrative staff will free time formerly used to order, unpack, and inventory software, maneuver stacks of boxes, and track license numbers.

• Users will get automatic notices that the upgrade they purchased is available to install.

• Users can have updates without waiting for purchase orders and deliveries.

• Software compatibility problems should decrease because users throughout the Laboratory can all obtain new versions simultaneously.

• Having no shrink-wrap packaging frees shelf space, reduces waste, and lowers product costs.

• The Laboratory is institutionally embracing volume-purchasing mechanisms, which will increase employee productivity.

• Organizations more accurately know what upgrade expenses will be through FY98.

When you're ready to purchase a Microsoft update but have not yet received an automatic e-mail notice, check before you buy—you or someone in your organization may have already purchased it for you. Don't buy twice! To see a list of the products you already own, follow the steps below.

1. Access the ESD Web page at http://esd.lanl.gov,

2. Enter your Z number and ICN password as prompted,

3. Click on the "Enter" icon,

4. Click on the "Lic. Utility" icon,

5. Enter your Z number as prompted, and

6. Click on the "Submit" button.

If a product is already available through Electronic Software Distribution (ESD), follow the instructions on the ESD Web page to download or install the upgrade. New product availability may be slightly delayed because ESD administrators will test all new products before making them available. Some software will need Information Architecture approval before it will be available through ESD.

To obtain Maintenance for new software purchases, place your order through Microsoft SELECT by utilizing the ESD Web page.

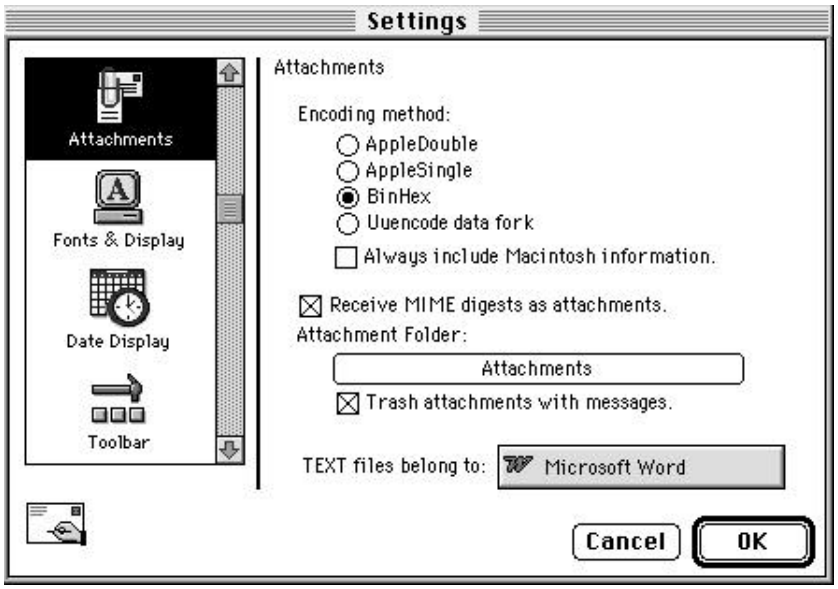
For more information, contact your systems administrator or esdmaster@lanl.gov.

Marcia Hunsberger, marcia@lanl.gov, (505) 665-4668
Communications Arts and Services (CIC-1)
Remote Electronic Desktop Integration (REDI) Project

MacTips: Dealing with Attachments in Eudora Pro

Encoding Methods and How to Use Them

Eudora Pro for the Macintosh allows you to send attachments using any of the following encoding methods: AppleDouble, AppleSingle, BinHex, and Uuencode. The first two, AppleDouble and AppleSingle, are based on MIME (Multipurpose Internet Mail Extensions). MIME uses Base64 encoding and is widely regarded as the Internet standard. It is the newest form of encoding and generally the best choice for sending files to either Macintosh or Windows computers. (That's why it's the default encoding selection in Eudora). However, since it is a newer standard, some older e-mail programs don't support it, so if your recipient has trouble reading your MIME attachments, try changing your encoding method to BinHex or Uuencode. Here's how. Open the Settings window which is found under Special on the Eudora menu bar. Then use the scroll bar in the Settings window to locate the Attachments icon. Just click on the icon and the Settings window will appear (see Figure below). Now you can select any one of four encoding methods.



The Eudora Pro Settings Window

AppleDouble and AppleSingle: If you decide to use MIME, it's best to use AppleDouble when sending to Macintosh or PC users. AppleSingle is also good for Macintoshes but not so good for PCs. An AppleSingle attachment may not be understood by a PC because it includes both the data fork and the resource fork of the file. The resource fork is useless to a PC. AppleDouble splits these files up during transport, so a PC can trash the resource fork when it receives the file and just use the data fork. Since you often don't know what kind of computer your recipient might have, AppleDouble is usually the best choice.

BinHex: This is a traditional Macintosh method for encoding files. But it is a good choice only when sending Macintosh files to recipients who do not have a MIME compliant mail reader.

Uuencode: Uuencode is best used only when the recipient asks for it. This will mainly occur when your recipient is using a UNIX or PC mailer that does not support MIME.

How to Fix a Garbled Attachment

Suppose you receive an e-mail attachment that's just garbled characters—what happened? To determine whether the problem is on your end, try sending yourself attachments with various encoding methods. If the attachments you send yourself are mangled, the problem is most likely with your server and there's not much you can do except call the people who maintain your particular mail server and ask for help in solving your problem. However, if the attachments you send to yourself are okay, but those from others are sometimes bad, then the message was either formatted improperly on the sending e-mail program or the message was mangled during transit. Either scenario can cause an attachment to incorrectly appear in the body of the message. Normally, attachments are included in the body during transit of the message, but also contain headers that tell Eudora to decode and separate out the attachment.

There are at least two ways to fix a garbled attachment. The easiest fix is to ask the person who sent the attachment to you to resend it using Uuencode (if you have Eudora Pro) or BinHex. If that doesn't work or if you happen to be using a non-commercial version of Eudora, you can decode the attachment manually. Here's how. When you get the attachment, copy all the garbled text into a single, plain-text file. Use NotePad or WordPad on the PC, or use SimpleText or TeachText on the Macintosh. If the attachment is split up into several messages, select all the messages and choose Save As from the File menu to save all the text into one text file. Now open the file in the text editor and edit it so that all the e-mail headers are deleted. Then save the file, being sure you save it as a plain-text file (i.e., ASCII or .TXT). Now run a decoding utility on the text file. A good place to download such a utility is www.shareware.com. Once you access this Web site, you can do a search for the kind of decoding utility you need (Base64 for MIME attachments; Uuencode; or BinHex).

Jerry Weber, gldw@lanl.gov, (505) 667-7410
CIC Communications Support Team

Research Library Training

The LANL Research Library provides training for using its specialized databases. Training sessions begin and end at times indicated below. Classes are free but you must preregister by calling the Research Desk at 7-5809 or sending e-mail to library@lanl.gov. Special classes and orientations can also be arranged.

Date	Time	Subject Matter
8/5/97	1:00 - 1:30 p.m.	Business Sources on the WWW
8/6/97	1:00 - 1:30 p.m.	Finding Addresses and Phone Numbers on the WWW
8/7/97	2:00 - 4:00 p.m.	InfoSurfing: Basic Web Searching Strategies
8/13/97	11:00 - 11:30 a.m.	MELVYL (U of CA specialized databases)
8/14/97	1:00 - 1:30 p.m.	SciSearch Alerting Service
8/19/97	1:00 - 1:30 p.m.	Business Resources on the WWW
8/20/97	1:00 - 1:30 p.m.	Finding Addresses and Phone Numbers on the WWW
8/21/97	2:00 - 4:00 p.m.	InfoSurfing: Basic Web Searching Strategies
8/26/97	1:00 - 1:30 p.m	Search Engines, Advanced Web Searching
8/28/97	1:00 - 1:30 p.m.	Research Library Catalog via the WWW
9/2/97	1:00 - 1:30 p.m.	Grants and Funding on the WWW
9/4/97	1:00 - 1:30 p.m.	SciSearch at LANL—At your desktop!
9/9/97	1:00 - 1:30 p.m.	Environmental Resources on the WWW
9/10/97	1:00 - 1:30 p.m.	Finding Addresses and Phone Numbers on the WWW
9/11/97	2:00 - 4:00 p.m.	InfoSurfing: Basic Web Searching Strategies

Labwide Systems Training

The Customer Service Group (CIC-6) offers training for users of Laboratory information systems. The CIC-6 courses offer training for a variety of personnel including property administrators, group secretaries, training coordinators, budget analysts, group leaders, or anyone needing to access training records, property records, costs, employee information, travel, chemical inventories, etc. Refer to the table below for specific information about courses currently offered.

You must have a valid ICN password before taking any of the courses shown in the table. To register for a course, call the CIC-6 Training, Development, and Coordination section at 667-9559 or access our Web page. From the LANL home page, look under "Services/Computing at LANL/Training" or enter the URL: http://www.lanl.gov:8010/computer-information/cic6/teampage.html.

Course Title	Date	Time	Cost	Course Number
Employee Development System - Basic Training (EDS I)	8/6/97 & 9/10/97	8:30–12:00	$350	Course #5289
	The course provides hands-on instruction to request course enrollment, use the on-line course catalog, retrieve training transcripts, and assign EDS authorities. The student will learn to create courses, add students to the courses, and generate several training reports.			
Employee Development System - Training Plans (EDS II)	8/20/97 & 9/24/97	1:30–5:00	$350	Course #7155
	Participants receive hands-on instruction to create and maintain training plans, assign assignment codes, and generate training plan reports. Attendees must have prior training in the Employee Development System.			
Eudora Electronic Mail	TBA	1:30–3:30	$175	Course #9762
	This class is a hands-on class that teaches the participant how to use Eudora software to create, send, receive, and edit electronic mail messages. In addition to these procedures, the participant will learn what related settings mean and how to configure the system to meet his or her individual needs.			
Data Warehouse Basics	8/12/97 & 9/11/97	8:30–10:30	$175	Course #11961
	Students will receive hands-on training to generate standard reports and make quick queries from information in the data warehouse, a real-time collection of data tables from Laboratory financial, time-reporting, and personnel systems.			
Data Warehouse/ Financial Reporting	8/12/97 & 9/11/97	8:30–12:00	$350	Course #11960
	Students will receive hands-on training to generate standard financial reports and make on-line queries from information in the "data warehouse," a collection of data from Laboratory budgeting, accounting, and time-keeping systems.			
HTML Basics	8/7/97 & 9/9/97	8:30–12:00	$350	Course #11605
	Students will gain a basic understanding of HTML (Hypertext Markup Language), the language for the World Wide Web. Topics covered will be commands and standards, creating and editing documents, and authoring programs.			
HTML Tables	8/19/97 & 9/23/97	8:30–12:00	$350	Course #11959
	Students gain basic understanding of how to create various tables in HTML and new tags in HTML 3.0. Netscape-specific tags are also identified for clarity. Prerequisite: HTML Basics or permission of the instructor.			

Course Title	Date	Time	Cost	Course Number
Utilizing Netscape	TBA	8:30–10:30	$175	Course #10961
	Students gain basic understanding of the Internet, the World Wide Web, and Netscape as a browser to surf the Net. Topics covered are both Laboratory sites and open sites, along with practical uses of the Internet.			
Notes Basics 4.5	8/14/97 & 9/25/97	8:30–12:00	$350	Course #9917
	Participants receive hands-on computer instruction to learn to create and send Notes e-mail memos, fax documents, search on one or multiple databases, use views and folders, create nicknames and distribution lists, set defaults, create doclinks, send attachments, and replicate databases.			
Meeting Maker	8/5/97 & 9/9/97	8:30–10:30	$175	Course #12395
	Students learn how to create an address book, create personal groups, utilize the Auto-Pick feature, utilize e-mail integration with non-Meeting Maker users, and customize various Meeting Maker features.			
On-Line Forms	8/12/97	1:30–3:30	$175	Course #9756
	Participants will learn to use Netscape software to access Lab-wide information and forms. Using Jetform Filler software, participants will access, complete, and print forms such as the "ICN Validation Request," "Visitor Request for Unclassified Visits to Security Areas," and "Request for Quotation."			
Reporting with Infomaker	9/12/97	8:30–5:00	$650	Course #11054
	Hands-on training to query data and develop ad hoc, or non-standard, reports from the LANL data warehouse using Infomaker software.			
Time and Effort System (GUI)	8/6/97 & 9/3/97	1:30–3:30	$175	Course #11018
	The student will learn how to enter attendance, amend attendance, approve attendance, and submit exception and approval reports. Time codes and associated policies will be discussed. The student will also learn how to use the Information Manager utility to view and print reports.			
Travel	8/15/97 & 9/16/97	8:30–12:00	$350	Course #12091
	Hands-on training to submit and approve travel requests and expenses in the new Travel System which replaces the TRIPS on-line system and the post-travel expense worksheets.			

Advanced Technical Computer Training

The Customer Service Group (CIC-6) supports advanced technical training in computing areas such as programming languages, system administration, networking, and World Wide Web development tools. The support provided by CIC-6 can be as limited as providing the appropriate facilities for a specific group or as extensive as coordinating training functions such as system administration, vendor acquisition, EDS administration, and class facilitation. The table below lists classes that are either currently being offered or are available on request. An expanded list of classes that are potentially available can be viewed on the Internet at http://www.lanl.gov:8010/computer-information/ComputerTraining/Vendor.html. To request registration in any course or for general assistance, please contact the CIC-Division Advanced Technical Computer Training Coordinator at (505) 667-9399 or send e-mail to cic6-train@lanl.gov. *Cost per student will vary depending on the total number of students enrolled in the class.

Course Title	Date	Time	Cost	Course Number
C Programming (Beginning)	12/1–5/97		$1500-$2000*	3996
	Prerequisite(s): Knowledge of another high-level Programming Language. Topics Include: Fundamentals; History and Uses of C; Current State of Standard; Elements of C; Concepts and Terminology; Basic Structure of Program; Good and Bad Aspects of C; Data Types, Arrays, Structures, Pointers, Unions, and Bitfields; Operators and Expressions; Storage Classes; Library Functions; File I/O; Math, String, Database Operations; Modular Programming; Preprocessors, Macros, Conditional Inclusions/Expressions, Types, and Prototype; Additional Tools; Control Flow Constructs; Debuggers; and Additional Libraries.			
C++ for Experienced C Programmers	Available on Request (5 days)		$1600 – $1900*	9050
	Prerequisite(s): Excellent C Language programming skills. Topics Include: Major Differences and Additions to ANSI C; Building C++ Classes; Introduction to Text I/O with C++; Function Overloading; Single Inheritance; Virtual Functions; Multiple Inheritance; Operator Overloading; Creating, Initializing and Assigning Objects; Passing and Returning Objects; Templates, Parameterized Functions and Classes; C++Stream I/O with the File System; and C++ Course Summary.			
FrameMaker (Basic)	Available on Request (3 days)		$1000-$1300*	8962
	Prerequisite(s): Familiarity with use of a mouse. Topics Include: Editing and Formatting Text; Applying, Modifying, and Creating Paragraph and Character Formats; Searching for and Changing Text and Formats; Using the Thesaurus and Spelling Checker; Creating and Editing Graphics Using Drawing Tools; Using Text Run-Around; Applying Side Heads, Run-In Heads, and Straddles; Using FrameMaker Templates and Clip Art Files; Using Tables and Basic Table Formatting; Adding Illustrations to a Document (Anchored Frames); Using and Formatting Footnotes in Text and Tables; Changing the Basic Layout of a Document (on Master Pages); and reference Pages and Referenced Art.			
FrameMaker (Advanced)	Available on Request (2 days)		$700-$1000*	8964
	Prerequisite(s): FrameMaker Basic course or equivalent knowledge and experience. Topics Include: Complex Auto-Numbering; Table Formats, Row Formats, and Table Variables; Formatting Text in Table Cells; Customizing Table Formats; Designing Custom Pages; Creating Templates for Documents, TOCs, and Indexes; Multiple Flows, Multiple Columns, and Connecting columns; Using Hypertext; Generating a Table of Contents and an Index; Creating a Book with Multiple Files; Using Cross-References and Text Insets; Creating Documents that Contain Conditional Text and Graphics; and Using Color.			

Course Title	Date	Time	Cost	Course Number
Java Applications Programming	8/11–15/97		$1800 – $2100*	11687

Prerequisite(s): Students must have the ability to create compiled programs using an advanced language (such as C or C++) and the knowledge to use basic Solaris commands and a World Wide Web browser (such as Mosaic or Netscape). Topics Include: Using the Java Programming Language to Create Java Applications and Applets; Defining and Describing Garbage Collection, Security, and the Java Virtual Machine; Describing and Using the Object-Oriented Features of the Java Language; Developing Graphical User Interfaces in Java, Taking Advantage of the Various Layout Managers Supported by Java; Describing and Using the Java 1.1 Delegation Event Model; Using Java Windowing Components, Including Mouse Input, Text, Window, and Menu Components; Using Java Exceptions to Control Program Execution and Define Custom Exceptions; Using the Advanced Object-Oriented Features of the Java Language, Including Method Overriding and Overloading, Abstract Classes, Interfaces, Final and Static, and Member and Field Access Control; Using Java to Perform File Input/Output; Using Java's Built-In Threading Model to Control the Behavior of Multiple Threads; and Using Java to Access Servers and Clients Through Sockets.

Java Programming Workshop	Available on Request (5 days)		$1800–$2100*	12872

Prerequisite(s): Completion of Basic Java Programming and Java Applications Programming courses or equivalent knowledge. Topics Include: Designing and Developing Java GUI and Live Java Applications; Using a Subset of ANSI SQL to Communicate with a Relational Database; Programming a Java Network Connection and Interface; Understanding the Basic Structure of the JDBC-API; Constructing a Query-By-Example Interface, Including Data Parsing and Formatting; Listing Porting Issues Between Solaris 2.X and Windows NT; and Explaining the Steps for Including Native Methods in Java Code.

Netscape Enterprise Server Administration	Available on Request (3 days)		$1300–$1700*	

Prerequisite(s): Unix and/or Windows NT System Administration experience. Topics Include: Install Netscape Navigator; Install Netscape Enterprise Server from a Tarfile or From CD-ROM; Configure the Server; Review Statistics of Server Activity; Monitor and Archive Log Files; Identify Areas to Enhance Server Performance (Software and Hardware); Request a Digital Certificate from a Security Vendor; Install a Digital Certificate; Create a Catalog and Text Search Interface for the Server; and Locate Additional Resources to Troubleshoot the Server.

Perl Programming	11/18–21/97		$1600–$2000*	8095

Prerequisite(s): Knowledge of Unix, the ability to edit text files (using vi or the OpenWindows Text Editor), and the ability to use basic programming constructs (variables, loops) to write simple programs in at least one programming language. Topics Include: Use Perl's Scalar Variables, Arrays, and Associative Arrays, Including Built-In Functions; Use Perl's Various Operators (Arithmetic, Conditional, String, Etc.); Use Regular Expression Metacharacters and Statement Modifiers; Open Files, Directories, and Input/Output Filters via Filehandlers; Use the Unix System Interface Functions; Create Subroutines and Use the Perl Standard Library; Use Packages for Encapsulation; Handle Signals and Errors; and Write Nawk-Like Reports.

SGI System Administration (Beginning)	Available on Request (5 days)		$1800–$2300*	11688

Prerequisite(s): Familiarity with using Silicon Graphics IRIS workstations and system administration procedures on other open system platforms. Topics Include: The Role of the System Administrator; Set Up and Configuration of an IRIS Workstation or Server; Supporting a Group of Silicon Graphics Users; System Security Maintenance; Backups and Recoveries; Configuration of Disk Drives; System Installation and Application Software; Attaching Terminals and Printers; Modifying the system Start Up and Shut Down Sequences; Automating Administrative Procedures; and Performing Basic System Troubleshooting.

Solaris 2.X Server Administration	Available on Request (4 days)		$1600–$2000*	

Prerequisite(s): Solaris 2.X Beginning System Administration class and six months of experience OR two years of Solaris 2.X system administration experience. Topics Include: Install and Use Solstice Backup; Install and Use Solstice DiskSuite; Configure a Sun X-Terminal; List the Different Accounting Types and Set Up Accounting; List the Different License Configurations and Install a License Server Using FLEXlm; and List Reasons to Distribute Data and Use rdist for Data Distribution.

Course Title	Date	Time	Cost	Course Number
SGI Network Administration	Available on Request (5 days)		$1800–$2300*	11690
	Prerequisite(s): Completion of Silicon Graphics System Administration (Beginning) course or equivalent knowledge and experience. Topics Include: Networking Fundamentals; Network Configuration; Network Troubleshooting; Resource Management with Network; Information Services; Domain Management with Domain Name System; Electronic Mail with Sendmail; Remote File Sharing with Network File System & Automounter; Network Performance Monitoring; and Network Security.			
SGI System Administration (Advanced)	Available on Request (5 days)		$1800–$2300*	11689
	Prerequisite(s): Completion of Silicon Graphics System Administration (Beginning) course or equivalent knowledge and experience. Topics Include: System Error Monitoring; Kernel Reconfiguration and Debugging; System Monitoring Tools; Process Management; MultiProcessor CPU Management; Memory Management and Tuning; Swap Management and Tuning; Disk Management and Tuning; XPS Filesystem Management; and System Security Concepts.			
Solaris 2.X System Administration (Beginning)	Available on Request (5 days)		$1600–$2000*	7477
	Prerequisite(s): Knowledge of Unix commands and an editor. Topics Include: Custom Install a Solaris 2.X Server; Use the Solaris 2.X Device Naming Conventions; Use the Format Utility to Display Partition Information; Change System Run Levels; Add Startup Files for Additional Services; Add and Remove Software Packages; Add Peripheral Devices, Configure Terminals and Modems; Administer Disks and File Systems; Configure NFS to Support the Client-Server Environment; Use the Automounter; Add and Remove Diskless Clients; Back Up and Restore File Systems; Perform Basic Recovery and Troubleshooting Procedures; and Use Scripts to Configure and Administer the NIS+ Environment.			
Solaris 2.X Network Administration	9/8–12/97		$1600–$2000*	8107
	Prerequisite(s): Completion of Solaris 2.X System Administration (Beginning) class or equivalent knowledge and experience. Topics Include: TCP/IP Networking Model's Major Protocols; Monitor Network Traffic; Monitor and Control the Address Resolution Protocol Cache; Set Up, Configure, and Manage a Sun Internet Router with Subnets; Identify the Differences Between TCP and UDP; Manage Client-Server Transport Layer Communications; Configure and Maintain RPC-Based Applications Support; Describe Common Applications, Systems, and Network Bottlenecks; Test and Monitor System, Disk, and Network Loads; Use Monitoring Commands to Find Performance Bottlenecks; Set Up and Maintain a Simple Domain Naming Service (DNS) Environment; Set Up a Jumpstart Automated Network Installation Server; Identify Sendmail Functionality and Configuration; Install a Mail Server; and Install UUCP Between Existing Solaris 2.X Systems.			
UNIX (Basic)	10/14–17/97	8:15–12:00	$400	5267
	Prerequisites: Basic computer literacy (knowledge of the keyboard and mouse) are helpful. Topics: Getting Started; UNIX File System; Editing with VI; Manipulating Files; Using C-Shell Features; Customizing Your Environment; Navigating the Network; Job Control; Generic UNIX E-mail; and Electronic Mail Registration (EMR).			
UNIX (Advanced)	10/21–24/97	8:15–12:00	$400	12972
	Prerequisites: The Basic Unix class or equivalent knowledge. Topics: File Manipulation; File Reorganization; Network File System Concepts; Introduction to C-Shell Scripts; Conditional Execution; Shell Programming; The Korn Shell; Korn Shell Script Features; and SED Filtering Tool.			

cut along dashed line

Los Alamos
National Laboratory

INTEGRATED COMPUTING NETWORK (ICN) VALIDATION REQUEST

Instructions:

(1) Complete all parts of this form that apply to you. Please take note of the "Special Requirements" section and complete any applicable parts.
(2) Manager (Group Leader or above) authorization and signature are required for all validation requests.
(3) Before submitting this request, ensure that your Employee Information System (EIS) information is current.
(4) Once completed, either mail this request to the Password Office at MS-B251, fax it to (505) 667-9617, or, if you are cleared, handcarry it to TA-3, SM-200, Room 257.

If you have **questions** call (505) 665-1805 or send e-mail to validate@lanl.gov

Owner Information

Z-Number (if you have one)			Name (last, first, middle initial)
LANL Group	Phone Number	LANL Mail Stop	Citizenship (Foreign National see "Special Requirements-Foreign National")

Check LANL affiliation:

- ☐ LANL employee
- ☐ Contractor _____ (specify contract company)
- ☐ External user_____ (specify employer)
- ☐ Other (specify)_____

Send password / smartcard to:

☐ Mail Stop or ☐ Mail to address indicated below

Name / Organization
Address
City, State, Zip Code

Access

Check access method and needed partitions:

Access method: ☐ ICN Password ☐ Smartcard ☐ Both

☐ **Open** partition (e.g., open machines, or for dial up access)

☐ **Administrative** partition (e.g., Travel, Data Warehouse, IA [BUCS, Stores], IB [EIS, FMIS, PAIRS])
If you are not a cleared LANL employee, see required steps in section "Special Requirements-Administrative Partition".

☐ **Secure** partition (i.e., secure machines)
A Q-clearance is required for secure access. After obtaining Manager signature for Secure access, handcarry this form to the Password Office to obtain your Secure account.

I certify this person does require **secure** access:

_____ _____
Manager Signature (Group Leader or above) Date

Password Office Use Only

New ☐ Change ☐	Clearance Status	Processed	Lv	Smartcard Serial #
Comments:				

Form 1646 (3/95) Supersedes previous versions (rev. 4/97).

Continue

Special Requirements

Administrative Partition
Lab-Wide Systems (e.g., Travel, Data Warehouse, IA [BUCS, Stores], IB [EIS, FMIS, PAIRS])

☐ Under 18 years of age

If you need to access Administrative systems, your Group Leader must provide a memo accepting responsibility for your actions and justifying your need for access. This memo is to accompany all forms taken to the security briefing (see "Contractor or Non-Cleared") section below. You may not access the Secure Partition.

☐ Contractor or Non-Cleared

Phone (505) 665-4444 (option #2) to obtain Access Authorization packet.

Phone (505) 667-9153 to schedule a security briefing.

Bring all forms including this ICN Validation Request to the security briefing for approval.

CIC-6 Security Briefing Approval Signature	Date

☐ Foreign National

Attach a copy of Form 982 (REQUEST FOR UNCLASSIFIED VISIT OR ASSIGNMENT BY A FOREIGN NATIONAL) with all approval signatures. Be sure Box #11 of Form 982 is completed. If you are not a visitor/assignee under a LANL/DOE approved Visit / Assignment Request, attach written justification from your host Group Leader or Division Director describing your need to access the ICN.

Authorization (required)

Print Manager Name (Group Leader or above)	Manager Z-Number	Group
Manager Signature (Group Leader or above)	**Mail Stop**	**Date**

If you are NOT a LANL employee you must have a LANL contact and obtain the contact's signature in addition to the contact's manager's signature.

LANL contact: Read the following and sign below.

By signing this form I affirm that I understand and accept the following:

a. I am a regular Laboratory employee.

b. I am responsible for forwarding password reauthorizations and verifying annual account reauthorizations for this user.

c. I am responsible for notifying the Password Office within 10 days of changes in my status.

d. I am responsible for notifying the Password Office immediately of changes in this user's status (termination, end of contract, etc.).

Print LANL Contact Name	Contact Z-Number	Phone Number	Group
LANL Contact Signature		**Mail Stop**	**Date**

NOTE: All Laboratory computers, computing systems, and their associated communication systems are for official business only. By completing this validation request and signing for a password and/or smartcard, you agree not to misuse the ICN. The Laboratory has the responsibility and authority to perodically audit user files.

Reader Feedback

Feedback helps us to provide a document that responds to the changing needs of its readership. If you have comments or questions about this publication, please let us hear from you. We have reserved the back of this form for that purpose. We also accept articles for publication that are of interest to our readers. Contact the managing editor for more information. This form is also used for new subscriptions, deletions, or changes. Instructions are on the back. If you prefer to contact us by E-mail, send your comments and/or subscription request to finney@lanl.gov.

Do Not Staple
Fold on This Line First

cut along dashed line

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 88 LOS ALAMOS NM

POSTAGE WILL BE PAID BY THE ADDRESSEE

MAIL STOP B251
ATTN: MIKE FINNEY, MANAGING EDITOR
CUSTOMER SERVICE GROUP (CIC-6)
LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663
LOS ALAMOS NM 87544-9916

Do Not Staple, Seal with Tape
Fold Here

Feedback

New Subscriptions, Deletions, and Changes

BITS is published by Los Alamos National Laboratory. If you would like to be added to or deleted from our mailing list, please check the appropriate line, complete the form below, and mail us the form.

_____ Add my name to the BITS mailing list.

_____ Delete my name from the BITS mailing list.

_____ Change my name/address as indicated below.

Name		Date
Address		Mail Stop
Group	Organization	
City	State	Zip
Phone	Number of copies	Employee Z#

INDEX

Keywords	Title of BITS Article	Date	Page
Apple	*Apple's NeXT OS Plans*	*Feb. '97*	*17*
ASCI	*The Accelerated Strategic Computing Initiative (ASCI)*	*Feb. '97*	*1*
Advanced Networking Projects	*Advanced Networking Projects Support High-Performance Computing at Los Alamos*	*Nov. '96*	*2*
Beta	*The Phasing out of Beta and Its Alternatives*	*Nov. '96*	*8*
Challenge	*Challenge to Start Seventh Year*	*Sept. '96*	*4*
CIC (Computing, Information, & Communications)	*CIC Implements New Recharge Processing System*	*Sept. '96*	*1*
	CIC Division Strategies and Tactical Goals	*May '97*	*6*
CIC-4	*CIC-4 Awards External Paging Contract and Expands Local Paging Capabilities*	*Aug. '96*	*5*
CIC-6	*Desktop Consulting Moves to CIC-6*	*Feb. '97*	*6*
	CIC-6 Provides Desktop Consulting	*Mar. '97*	*1*
	The CIC-6 Training, Development, and Coordination Team	*May '97*	*1*
Cluster	*Cluster Tutorials on the Web*	*Aug. '96*	*8*
	Maple on the Cluster	*Aug. '96*	*11*
	TeX on the Cluster	*Nov. '96*	*13*
	IBM XL High-Performance Fortran Now Available on the Open Cluster	*Nov. '96*	*14*
Database	*DOE Energy Science & Technology Database Coverage Expanded*	*Feb. '97*	*7*
	BIOSIS Database Now Available Via CIC-14	*Feb. '97*	*7*
	DOE Energy Database Now Available in a WWW Version	*Apr. '97*	*3*
Electronic Journals	*Improved Access to Electronic Journals from Your Desktop*	*Apr. '97*	*2*
E-mail	*Don't Get too Attached to Your [E-mail] Attachments*	*Oct. '96*	*8*
	Capturing E-mail as a Record at LANL	*Nov. '96*	*5*
Enterprise Information Systems	*Enterprise Information Systems*	*Oct. '96*	*6*
External Computing Project	*External Computing Project*	*Dec. '96*	*9*
Gartner Group	*Gartner Group Services Available on the Web*	*June '97*	*4*
GNU Utilities	*GNU Utilities Now Available Locally on /usr/lanl*	*Dec. '96*	*10*
HPD (Heterogeneous Parallel Debugger)	*HPD: Heterogeneous Parallel Debugger*	*Nov. '96*	*2*
HTML (HyperText Markup Language)	*The Current State of HTML*	*Dec. '96*	*11*
	The Current State of HTML: Part II	*Feb. '97*	*8*
ICN (Integrated Computing Network)	*ICN Password Office Provides FAQ Web Page*	*Oct. '96*	*7*
	The ICN Consulting Office	*Feb. '97*	*4*
	The ICN Password Office	*June '97*	*1*
ICNN (Integrated Computing Network News)	*The Integrated Computing Network News (ICNN) Web Site*	*May '97*	*3*
JavaScript	*JavaScript Observations and Tips: Part I*	*Mar. '97*	*10*
	JavaScript Observations and Tips: Part II	*May '97*	*11*
Lab-Wide Systems	*Consulting for Lab-Wide Systems*	*Dec. '96*	*1*
	Lab-Wide Information Systems Descriptions	*Dec. '96*	*3*
	Authorities for Lab-Wide Systems	*Dec. '96*	*6*
	Common Validation Error Messages and Possible Solutions for Lab-Wide Systems	*Feb. '97*	*11*
	Accessing GUI Lab-Wide Systems on the Macintosh	*Mar. '97*	*9*
Macintosh	*Four Macintosh Shareware Programs That Will Make Scientists Happy*	*Sept. '96*	*9*
Maple	*Vendor Training Available for Maple Users*	*Dec. '96*	*17*
Mathematica	*Mathematica Tutorial Available on the Web*	*Feb. '97*	*12*
Medicare	*Computer Sleuths Hunt for Medicare Bandits*	*Sept. '96*	*2*
Mercury	*Mercury Open-Secure ICN File Transfer Service Now Available*	*Oct. '96*	*4*
	Workout with Mercury—Step by Step File Transfer Using Mercury	*Dec. '96*	*14*

Keywords	Title of BITS Article	Date	Page
Micoms	*The End of an Era: No More Micoms*	*May '97*	*2*
Microsoft	*Software Discounts Available through Microsoft SELECT*	*Feb. '97*	*6*
	New Microsoft SELECT Program Lowers Software Costs	*Mar. '97*	*2*
	New Software-Purchasing Feature Brings Savings on Microsoft Upgrades	*June '97*	*9*
Modeling	*Modeling Ultra-Low Loss Accelerators*	*Nov. '96*	*1*
OAG (On-line Airline Guide)	*OAG Service Announcement*	*Sept. '96*	*5*
PAGES (Print And Graphics Express Station)	*PAGES Replaces ILFORD Printer with FUJI Printer*	*Nov. '96*	*9*
REDI	*The REDI Project*	*Apr. '97*	*4*
Research Library	*Research Library's Monthly Electronic Newsletter*	*Aug. '96*	*8*
	Research Library's WWW Online Catalog	*Mar. '97*	*4*
SciSearch	*New Weekly Alerting Service via SciSearch at LANL*	*Nov. '96*	*6*
Secure Unclassified	*Good-Bye Secure Unclassified*	*Oct. 96*	*5*
Telephone Services	*FTS 2000 Provides Savings for LANL Telephone Services*	*Aug. '96*	*6*
Telnet	*Configuring Telnet as a Supporting Application under Netscape 3.X*	*Mar. '97*	*7*
TIG (Terminal Internet Gateway)	*Dial-Up TIG for the Administrative Network Now Available*	*May '97*	*9*
Universal Serial Bus (USB)	*The Universal Serial Bus Has Arrived*	*Apr. '97*	*6*
VersaTerm-PRO	*Configuring Your Macintosh Keyboard for VersaTerm-PRO*	*May '97*	*10*
Video Teleconference Center	*Video Teleconference Center Offers New Capabilities*	*Apr. '97*	*1*
World Wide Web (WWW or Web)	*Images on the Web: Some Tips*	*Aug. '96*	*1*
	Finding Phone Numbers and Addresses via the Web	*Sept. '96*	*5*
	Images on the Web: More Tips	*Sept. '96*	*6*
	Mariachis Weave Beethoven? More Tips and Tricks [on the Web]	*Oct. '96*	*1*
	Getting a Web Site Indexed	*Nov. '96*	*10*
	Tools for Developing Web Pages in the Windows Environment	*Dec. '96*	*18*
	Web Security in the Open Network Security Model	*Apr. '97*	*7*
	Using the Web to Track Funding Opportunities	*June '97*	*3*
	Web Cookies: Their Reason, Nature, and Security	*June '97*	*6*
Windows 95	*Keyboard Shortcuts for Windows 95*	*Dec. '96*	*22*
	Windows 95 SLIP Support Installation	*Feb. '97*	*13*

Produced by the Computing, Information, and Communications (CIC) Division

Managing Editor: Mike Finney (667-2241 or finney@lanl.gov)

Design: Gloria Sharp and Mike Finney

Illustration: Dave Delano (pages 1, 5, and 8)
Ruth Holt (page 15)

Printing: Media Group (CIC-17)

Los Alamos
NATIONAL LABORATORY

Los Alamos
NATIONAL LABORATORY

Los Alamos, New Mexico 87545

Nonprofit
organization
US Postage
PAID
Los Alamos, NM
Permit No. 107

BITS is published monthly to highlight recent computing and communications activities within the Laboratory. We welcome your suggestions and contributions. BITS can be accessed electronically via Web browsers such as Mosaic and Netscape. Enter the following URL:

http://www.lanl.gov/Internal/divisions/cic/publications.html

LALP-97-8 (7-97)